

## REMARKS

### I. Status of the Claims

Claims 21-37 are pending in the application and were the subject of the office action. All of the claims 21-37 stand rejected. Applicants request examination and favorable consideration in the view of following remarks.

### II. Claim rejections

The Examiner has rejected claims 21-24, 28, 30-31, and 35 as being obvious over US 6,527,458 to Kim (hereafter "Kim") in view of Graffenreid. Applicants believe that claims 21-37 are patentable as presently written. Claims 21 and 35 are directed to an optical device comprising, amongst other things, an optical component which may move within the enclosure in response to the thermal expansion or contraction of the optical fibers.

The Examiner indicates that as it relates to claim 21, Kim discloses a compact optical transceiver integrated module comprising an optical device comprising an enclosure having a wall member defining a cavity and a sealable fiber entry portion and an optical component located within the cavity and at least two optical fibers connected to the optical component and extending substantially adjacent one another through the entry portion.

The Examiner indicates that as it relates to claim 35 that Kim describes a method of sealingly enclosing an optical component, the method comprising the steps of: providing an enclosure having a wall member defining a cavity and a sealable fiber entry portion; arranging an optical component connected to at least two optical fibers within the cavity such that the two optical fibers extend substantially adjacent one another through the entry portion and sealing the fiber entry portion so as to sealably retain the optical component within the cavity. The Examiner admits that Kim does not specifically disclose that the optical component is moveable within the enclosure in response to the thermal expansion or contraction of the optical fibers.

Because of Kim's shortcoming, the Examiner combines Kim with Graffenreid and the Examiner indicates that Graffenreid discloses a device for thermally and stably supporting miniaturized optical and electrical components within enclosures using a cantilever. The

Examiner indicates that since Graffenreid is from the same field of endeavor as Kim, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the thermally stabilizing method of mounting optical components of Graffenreid with the optical device of Kim in order to provide better alignment of light beams during various temperature changes.

Applicants submit that Kim teaches away from providing an optical device wherein the optical component is movable within the enclosure in response to the thermal expansion or contraction of the optical fibers. Specifically, Kim discloses that both the laser diode subassembly and photodetector subassembly are "bonded onto" the silicon optical bench. Further, the optical fibers are "fixed" within V-shaped grooves by using an ultraviolet epoxy. (Column 4-5, lines 54-67 and 1-7 respectively.)

Kim further discloses that active components of the optical transceiver are covered with a specially designed case that covers these components thereby "fixing" them to the PCB. (Column 5, lines 44-63). Kim also discloses that silicon gel is applied on the laser diode subassembly and the photodetector subassembly to provide hermetic sealing, and an encapsulant is applied thereon to prevent external moisture absorption.

It is apparent from this disclosure of Kim that the component is fixed and is not free to move in response to the thermal expansion or contraction of the optical fibers. It is therefore evident that Kim does not have any movement.

Applicants traverse the combination of Kim and Graffenreid as the Graffenreid reference relates to a holder which is defined for thermal expansion. In other words the holder has 2 parts, of different thermal expansion coefficients  $\alpha_1$  and  $\alpha_2$  where they offset each other. This has nothing to do with allowing movement of the optical fibers due to the thermal expansion of the optical fibers. In fact, Graffenreid teaches that the relative position of the central orifice does not move at all. Graffenreid provides in col. 9, lines 17-40, that:

[i]f the support device shown is subjected to a temperature change – for example a temperature increase, the two "U"-limbs 4, 4' which are connected by the base section 6 to the base plate 2, expand, only the expansion in the longitudinal direction be considered here to be relevant for the position of the component. The distance between the fixing points 13, 13' on the "U"-limbs 4, 4' on the one hand and the base section 6 on the other hand increases as a result of the thermal expansion, cf. the upper pointing arrow. At the same time, the plate-

like support part 12 also expands, namely in the direction toward the base section 6, since it is connected in its upper section firmly to the U-limbs, 4, 4' at said fixing points 14, 14', cf. the downward-pointing arrow 9.

If the change in length of the "U"-limbs 4, 4' between said fixing points 13, 13' and the base section 6 is made just as large as the change in length of the plate-like support part 12 between its fixing points 14, 14' and the center of the orifice 17, then the distance between this center and the base section 6 remains constant, independently of temperature changes. [Emphasis Added].

Applicants believe that the Examiner has failed to make a prima facie case of obviousness under 35 U.S.C. § 103(a), for at least two reasons. First, the Examiner has failed to provide any articulated reasoning with a rational underpinning to support the legal conclusion of obviousness. See KSR, 127 Sup. Ct. at 1740-41 (requiring an explicit analysis when a conclusion of an obviousness is based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art). Kim specifically teaches that the component is to be fixed, so there is simply no motivation taught by Kim to allow movement. Second, even if combined, the two references do not teach the subject matter of the claims. Kim teaches that the component is to be fixed, and Graffenreid teaches that the thermal expansion of the component holder compensates for thermal expansion such that the location of the component does not change. Neither reference alone or in combination teach that "the optical component is movable within the enclosure in response to the thermal expansion or contraction of the optical fibers".

The Examiner has rejected claims 25-27 and 29 as being obvious over Kim in view of Graffenreid, in view of US patent 5,195,155, US patent 5,299,273, US patent 6,760,098 and US patent 7,168,863.

As for claim 25, the Examiner indicates that Salo (U.S. Patent 6,760,098) discloses a flexible sealing for the window to the housing. Salo, however, shows in Fig. 2 an optical window, Item 2, and indicates that "Teflon can be used in the sealing of the optical window, for instance, a prism", col. 3, lines 39-40. Applicants believe that the optical window 2 as described in Salo is not part of the enclosure as defined in the present application.

As for claim 26, the Examiner indicates that Shimaoka discloses an optical module with a thermal electric cooler for temperature control. Shimaoka, however, is an optical coupling apparatus having an LED and unrelated to an optical device having a sealable fiber entry portion. Thus, Applicants believe that the combination is not obvious.

As for claim 27, the Examiner cites Evans (U.S. Patent 5,299, 273); however Evans is simply showing a device connected to a printed circuit board, referred to as a "composite laminate panel 10", which has nothing whatsoever to do with providing a laminate for an enclosure. In relation to claim 29, the Examiner cites Yajima (U.S. Patent 7,168,863). Applicants believe that Yajima is not prior art to the present application as the present application claims priority to a GB filing dated January 30, 2004, a PCT filing date of January 11, 2005 whereas Yajima claims priority back to January 19, 2005 and was not published until July 20, 2006.

The Examiner has also rejected claim 33 as being obvious over Kim. The Examiner indicates that a change in size is generally not recognized as being patentable as it is within the level of ordinary skill in the art citing *In re: Rose*, 105 U.S.P.Q. 237. However, claim 33 indicates that "the enclosure is of a size and shape for fitting into an optical fiber organizer tray" which is different than simply changing the size.

Further, the Examiner has rejected claim 36 as being obvious over Kim in view of US-2004/240804 and claim 37 over US patent 6,151,338 in view of US patent 5,971,629.

As it relates to claim 36, the Examiner cites Mahapatra et al. indicating that a polymer coating is applied to the fibers during fabrication of hermetically sealed optoelectronic packages. The claim limitation however, is the provision of a polymer strip adjacent the optical fibers at the entry portion prior to sealing of the entry portion. Thus, the disclosure is Mahapatra et al. does not teach the limitation presently provided in claim 36.

As to claim 37, the Examiner cites Grubb et al. (U.S. Patent 6,151,338) and indicates that Grubb et al. discloses a high power laser system that can be used to solder or weld in order to seal together or merge adjacent outer polymer claddings of optical fibers. Again this reference relates to connecting together the optical fibers, not the fiber entry portion of the enclosure.

The Examiner has also rejected independent claim 34 as being obvious over Kim in view of US patent 6,850,461 to Maas. The Examiner indicates that Maas discloses a fiber optic

seismic array telemetry system comprising a fiber storage tray that also stores optical components such as isolators and amplifiers. Again the limitation in claim 34 indicates that the organizer tray assembly includes an optical fiber organizer tray and an optical device of claim 21 profiled for fitting in the optical fiber organizer tray. This is not taught or suggested by Maas.

In the event that there are any questions related to these amendments or to the application in general, the undersigned would appreciate the opportunity to address those questions directly in a telephone interview to expedite the prosecution of this application for all concerned.

Applicants do not believe that there are any fees associated with the filing of this Response. However, should there be any fees due in connection with this Response the Commissioner is hereby authorized to charge these fees to Baker & Daniels LLP's Deposit Account No. 02-0390.

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 29, 2009

  
Eric J. Groen

Respectfully Submitted,

By: 

Eric J. Groen, Reg. No. 32,230  
Baker & Daniels LLP  
300 N. Meridian Street, Suite 2700  
Indianapolis, IN 46204  
Phone: (317) 237-1115  
Fax: (317) 237-1000